

July 9, 2009

Alaska Department of Transportation & Public Utilities
2200 East 42nd Avenue
Anchorage, Alaska 99508

Attn: Mr. Ronald Searcy, P.E.

**RE: BASELINE SOIL SAMPLING AND ROM CLEANUP COST ESTIMATE,
HILAND MOUNTAIN CORRECTIONAL FACILITY, EAGLE RIVER,
ALASKA; PSA NO. 02582014; NTP NO. 4A**

This report presents the results of our limited environmental baseline study activities conducted at the closed shooting range at the Hiland Mountain Correctional Facility, Eagle River, Alaska. Notice to proceed with the work was received from Mr. Joel Aubin, P.E. of the Alaska Department of Transportation and Public Facilities (ADOT&PF) on March 20, 2009. The work was conducted in general accordance with our March 16, 2009 proposal.

SITE AND PROJECT DESCRIPTION

The project site is located east of the Glenn Highway frontage road, in the southeast $\frac{1}{4}$ of Section 14, Township 14 North, Range 2 West, Seward Meridian, Alaska. For the purposes of this report, the "project site" is defined as the former shooting range located east of the Hiland Mountain Correctional Center structures. A vicinity map showing the site and surrounding area is included as Figure 1. A site plan of the area is included as Figure 2.

The site was used as a shooting range by the Alaska Department of Corrections between 1980 and 1998. It is our understanding that the range was used by the Department of Corrections staff and other law enforcement personnel. Weapons used at the range were primarily handguns and shotguns. Shotguns were fired at stationary targets using slugs or 00-buckshot, not at moving targets as at trap or skeet ranges. The Property is to be subdivided, and remediation of the site will be necessary prior to redevelopment.

The overall project purpose is to address the lead-impacted soil to allow property re-use. The primary data collection objective is to evaluate the extent and degree of lead impacted soil at the former shooting range. Using that information, a budgetary cost estimate for remedial action was prepared and provided as an attachment to this report.

FIELD ACTIVITIES

Field activities for this project consisted of collecting characterization soil samples for analytical testing. The activities were conducted in material accordance with the 18 Alaska

Administrative Code (AAC) 75 Oil and Other Hazardous Substance (October 2008) regulations. Sample locations and descriptions are provided in Table 1. Photographs of site activities are included in Attachment 1.

On April 28, 2009, a representative from Shannon & Wilson collected and screened surface soil samples from the former firing range. A general view of the area is shown in Photo 1 included in Attachment 1. The samples were collected from three separate areas: grid area, target line, and berm backstop. The grid comprised of four approximately equal areas, between the firing line and the target line, as shown in Figure 3. Using hand tools, the samples were collected from the upper 4 inches of surface soil to qualitatively evaluate and document the extent of lead impact. The target line (Photo 2) and the berm backstop areas were qualitatively evaluated to a maximum depth of 12 inches below ground surface (bgs). Spent ammunition casings were observed throughout the project site, although no visible lead fragments were noted in the sample areas. Photos of spent casings are shown in Photos 3 and 4.

A total of 43 surface soil samples were screened for lead, and eight analytical samples were collected. Analytical samples were collected from four locations within the grid—one sample from each of the four areas identified as Sections A, B, C, and D on Figure 3. Within each grid, analytical samples were collected from areas where the most spent cartridges were observed. Samples were also collected from two locations along the former target line and two locations from the backstop berm.

The characterization samples were transferred to laboratory-supplied jars using dedicated stainless steel spoons, and submitted to SGS Environmental Services (SGS) of Anchorage, Alaska using chain-of-custody procedures. The samples were analyzed on a standard 15 working-day turnaround. The number, depth, and classification of samples collected for the project are summarized in Table 1.

LABORATORY ANALYSIS

Under the sample numbering scheme used for this project, a typical analytical sample number is '32-1-17294 SS5'. For brevity in the report text, the '32-1-17294', which indicates the Shannon & Wilson job number, is omitted.

Each analytical sample was analyzed for total lead by Environmental Protection Agency (EPA) Method 6020 and leachable lead by Toxicity Characteristic Leaching Procedure (TCLP) by EPA Method 1311. Two samples beneath the former target line were also tested for TCLP Resource Conservation and Recovery Act (RCRA) metals by EPA Methods 6020 and 1311.

The analytical results of the soil samples are summarized in Table 2. The laboratory report is included in Attachment 2.

SUBSURFACE CONDITIONS

Based on visual observations, the soil at the site is uniformly brown, gravelly, sandy silt from the ground surface to about 12 inches below ground surface (bgs). No groundwater was observed during the sampling activities.

DISCUSSION OF RESULTS

The reported total metals concentrations in the soil are compared to the cleanup levels listed in the Oil and Other Hazardous Substances Pollution Control Regulations (18 AAC 75.341, October 2008). The total metals soil criteria are based on the most stringent exposure pathway listed in Table B1 for the "under 40-inch (precipitation) zone". For the ingestion and inhalation exposure pathways, the Alaska Department of Environmental Conservation (ADEC) lead cleanup levels is 400 milligrams per kilogram (mg/kg) for unrestricted (residential) land use, and 800 mg/kg for commercial/industrial land use. The leachable metal concentrations are compared to the maximum contaminant level (MCL) listed in Table 1, 40 CFR 261.30 (July 1, 2008).

Project Sample Results

Samples from seven of the eight discrete locations contained total lead concentrations greater than 400 mg/kg. Lead concentrations in five of these samples also exceed the 800 mg/kg commercial/industrial cleanup level. The highest total lead concentration from the characterization samples was 49,800 mg/kg, reported in one of the two samples collected from the berm backstop. Despite elevated lead concentrations, no visible projectile fragments were observed in the samples. In addition, the two samples analyzed for RCRA total metals (Samples SS38 and SS40) contained concentrations of arsenic and chromium that exceed the ADEC cleanup levels. The arsenic concentration reported in Sample SS38 and the chromium concentration reported in Sample SS40 are within background concentrations.

Five of the eight soil samples contained leachable lead (TCLP) concentrations that exceed the 5 milligrams per liter (mg/L) MCL. The highest leachable lead concentration was 684 mg/L, measured in a sample collected from the berm backstop (Sample SS30).

Quality Control Results

Data quality for this project was assessed using internal laboratory procedures. No field quality control samples were collected as part of this scope. The project laboratory implements

on-going quality assurance/quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQO). Internal laboratory controls to assess data quality for this project included method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), and laboratory duplicates to evaluate accuracy, precision, and bias. If a DQO was not met, the project laboratory provides a brief narrative concerning the problem in the case narrative of their laboratory data report (see Attachment 2).

Shannon & Wilson reviewed the field data and SGS data deliverables and completed the ADEC's Laboratory Data Review Checklist for each work order, which are included in Attachment 2. The following non-conformances were noted:

- The arsenic practical quantitative limit (PQL) for Sample SS40 was elevated. However, the reported arsenic concentration for Sample SS40 was greater than the ADEC cleanup level, and the elevated PQL is unlikely to have affected the sample concentration.
- The cooler temperature was outside the range of $4^{\circ} \pm 2^{\circ}$ Celsius (C), with a temperature of 8° C. The samples are inorganics and elevated temperatures are unlikely to affect the sample results. In addition, samples were submitted to the laboratory shortly after sample collection.

ROM CLEANUP COST

We understand that the ADOT&PF intends to reuse the site and that a "Cleanup Complete with no Institutional Controls" regulatory status is preferred for the presumed land transfer. Because portions of the site contain lead concentrations that exceed the RCRA standard, excavated soil from these areas will be considered hazardous waste and will need to be treated within 90 days following excavation. Two options for treatment of this hazardous waste are described below, and rough order of magnitude (ROM) cleanup cost estimates are included in Attachment 3. The ROM estimates are provided for general planning purposes only and cannot be construed as a bid to complete cleanup work.

The first option is removal and off-site disposal of the soils that are greater than RCRA and ADEC standards. Neither soils with lead concentrations greater than RCRA standards nor soils with lead concentrations greater than ADEC standards can be disposed in Alaska. However, different disposal requests for the two types will necessitate the soils be segregated on site. The soil will be excavated, placed directly into disposal containers, and shipped to Oregon to a disposal facility. The ROM cost estimate for the Option 1 is provided in Attachment 3.

The second option is to recover the lead from the soil and reuse the soil on site. The contaminated soil will be excavated and screened through a wet-gravimetric recirculation

system. The segregated lead will be placed in supersacks and recycled. The soil will be dewatered and can be reused onsite, pending confirmation sampling. Note the equipment for the second option will only be available from July to August 2009 or after May 2010.

For both options, the ROM cost estimates assume that up to 300 cubic yards of soil are considered hazardous materials, and an additional 500 cubic yards of soil is non-RCRA but contains lead concentrations that are greater than the ADEC cleanup levels.

The two options differ in cost and certainty. Option 1 is more expensive; however, the cleanup outcome is more certain. Option 2 is less expensive, but is characterized by greater uncertainty than Option 1 due to the need for post-treatment samples from the segregated soil.

SUMMARY AND CONCLUSIONS

Based on our field investigations and analytical sample results, seven of the eight analytical soil samples contained lead concentrations that exceed the ADEC cleanup level; concentrations in five samples also exceed the lead RCRA standard. The highest concentrations were reported in the samples from the berm backstop.

CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of the ADOT&PF and their representatives in the study of this site. The findings presented within this report are based on the limited research, sampling, and analyses that we conducted. They should not be construed as definite conclusions regarding the site's soil. It is possible that our tests missed higher levels of total and leachable metal constituents, although our intention was to sample areas likely to be impacted in accordance with our proposal. As a result, the sampling and analysis performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

The data are not sufficient to characterize the entire site, or potential sources areas that are not specifically targeted. We tested for selected total and leachable metal constituents, although there may be other unexpected contaminants at the site. A typically baseline study includes researching historical documents to identify potential sources of contamination. In

accordance with the approved work scope, this research was not conducted; therefore, our sample locations were not targeted at specific potential sources of contamination.

The ROM estimates are provided in Attachment 3. The estimates are provided for general planning purposes. A detailed cost estimate can be provided, if requested.

Shannon & Wilson has prepared the attachments in Attachment 4, *Important Information About Your Geotechnical/Environmental Report*, to assist you and others in understanding the use and limitations of our report. You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study except with your permission or as required by law.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact the undersigned.

We appreciate this opportunity to be of service. Please call the undersigned at (907) 561-2120 with any questions or comments concerning the contents of this report.

Sincerely,

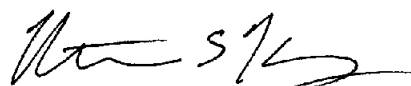
SHANNON & WILSON, INC.

Prepared by:



Shayla Swedlund
Environmental Scientist III

Reviewed by:



Matthew Henry, P.E.
Vice President

Encl: Tables 1 and 2
Figures 1, 2, and 3
Attachments 1, 2, and 3

TABLE 1 - SAMPLE LOCATIONS AND DESCRIPTIONS

Sample ID Number	Date	Sample Location (See Figure 3)	Depth (inches)	Sample Classification
Grid Samples				
SS1	4/28/2009	Section A; Northcentral edge of range	0-4	Brown, gravelly, sandy SILT; wet
SS2	4/28/2009	Section A; Adjacent to firing lane	0-4	Brown, gravelly, sandy SILT; wet
SS3	4/28/2009	Section A; Adjacent to firing lane	0-4	Brown, gravelly, sandy SILT; moist
SS4	4/28/2009	Section A; Adjacent to firing lane	0-4	Brown, gravelly, sandy SILT; moist
* SS5	4/28/2009	Section A; Adjacent to target	0-4	Brown, gravelly, sandy SILT; wet
SS6	4/28/2009	Section A; Between two firing lanes	0-4	Brown, gravelly, sandy SILT; wet
SS7	4/28/2009	Section A; Between two firing lanes	0-4	Brown, gravelly, sandy SILT; moist
SS8	4/28/2009	Section B; Between two firing lanes	0-4	Brown, gravelly, sandy SILT; moist
SS9	4/28/2009	Section B; Between two firing lanes	0-4	Brown, gravelly, sandy SILT; moist
SS10	4/28/2009	Section B; Adjacent to target	0-4	Brown, gravelly, sandy SILT; moist
* SS11	4/28/2009	Section B; Between two firing lanes and targets	0-4	Brown, gravelly, sandy SILT; wet
SS12	4/28/2009	Section B; Center of firing range, between lanes	0-4	Brown, gravelly, sandy SILT; wet
SS13	4/28/2009	Section B; Adjacent to firing lane	0-4	Brown, gravelly, sandy SILT; wet
SS14	4/28/2009	Section C; Northwest section of range	0-4	Brown, gravelly, sandy SILT; moist
SS15	4/28/2009	Section C; Between two firing lanes	0-4	Brown, gravelly, sandy SILT; moist
* SS16	4/28/2009	Section C; West end of firing lane	0-4	Brown, gravelly, sandy SILT; moist
SS17	4/28/2009	Section C; Between two firing lanes	0-4	Brown, gravelly, sandy SILT; moist
SS18	4/28/2009	Section C; Between two firing lanes	0-4	Brown, gravelly, sandy SILT; wet
SS19	4/28/2009	Section D; West end of firing lane	0-4	Brown, gravelly, sandy SILT; wet
SS20	4/28/2009	Section D; Center of firing range, between lanes	0-4	Brown, gravelly, sandy SILT; moist
* SS21	4/28/2009	Section D; between two firing lanes	0-4	Brown, sandy, gravelly SILT; moist
SS22	4/28/2009	Section D; Southwest section of range	0-4	Brown, gravelly, sandy SILT; wet
SS23	4/28/2009	Section D; Southcentral edge of range	0-4	Brown, gravelly, sandy SILT; wet
Berm Backstop				
SS24	4/28/2009	Approximately 5 feet above prevailing/level ground surface	0	Brown, gravelly, sandy SILT; frozen at surface
SS25	4/28/2009	Approximately 6 feet above prevailing/level ground surface	0	Brown, gravelly, sandy SILT; frozen at surface
SS26	4/28/2009	Approximately 7 feet above prevailing/level ground surface	0	Brown, gravelly, sandy SILT; frozen at surface
SS27	4/28/2009	Approximately 5 feet above prevailing/level ground surface	0-1	Brown, gravelly, sandy SILT; wet to frozen at 1 inch bgs
SS28	4/28/2009	Approximately 4 feet above prevailing/level ground surface	0-4	Brown, gravelly, sandy SILT; wet to frozen at 4 inches bgs
SS29	4/28/2009	Approximately 5 feet above prevailing/level ground surface	0-6	Brown, gravelly, sandy SILT; wet to frozen at 6 inches bgs
* SS30	4/28/2009	Approximately 5 feet above prevailing/level ground surface	0-8	Brown, gravelly, sandy SILT; wet to frozen at 8 inches bgs
SS31	4/28/2009	Approximately 4 feet above prevailing/level ground surface	0-6	Brown, gravelly, sandy SILT; wet to frozen at 6 inches bgs
* SS32	4/28/2009	Approximately 4 feet above prevailing/level ground surface	0-6	Brown, gravelly, sandy SILT; wet to frozen at 6 inches bgs
SS33	4/28/2009	Approximately 3 feet above prevailing/level ground surface	0-1	Brown, gravelly, sandy SILT; wet to frozen at 1 inch bgs

KEY DESCRIPTION

* Sample analyzed by the project laboratory (See Table 2)
bgs Below ground surface

TABLE 1 - SAMPLE LOCATIONS AND DESCRIPTIONS

Sample ID Number	Date	Sample Location (See Figure 3)	Depth (inches)	Sample Classification
Target Line				
SS34	4/28/2009	Adjacent to former target stand	0-12	Brown, gravelly, sandy SILT; moist
SS35	4/28/2009	Beneath former target stand	0-12	Brown, gravelly, sandy SILT; wet
SS36	4/28/2009	Adjacent to former target stand	0-12	Brown, gravelly, sandy SILT; wet
SS37	4/28/2009	Beneath former target stand	0-12	Brown, gravelly, sandy SILT; wet
* SS38	4/28/2009	Adjacent to former target stand	0-12	Brown, gravelly, sandy SILT; wet
SS39	4/28/2009	Adjacent to former target stand	0-12	Brown, gravelly, sandy SILT; moist
* SS40	4/28/2009	Behind existing target	0-12	Brown, gravelly, sandy SILT; moist
SS41	4/28/2009	Beneath former target stand	0-12	Brown, gravelly, sandy SILT; moist
SS42	4/28/2009	Adjacent to former target stand	0-12	Brown, gravelly, sandy SILT; moist
SS43	4/28/2009	Beneath former target stand	0-12	Brown, gravelly, sandy SILT; moist

KEY	DESCRIPTION
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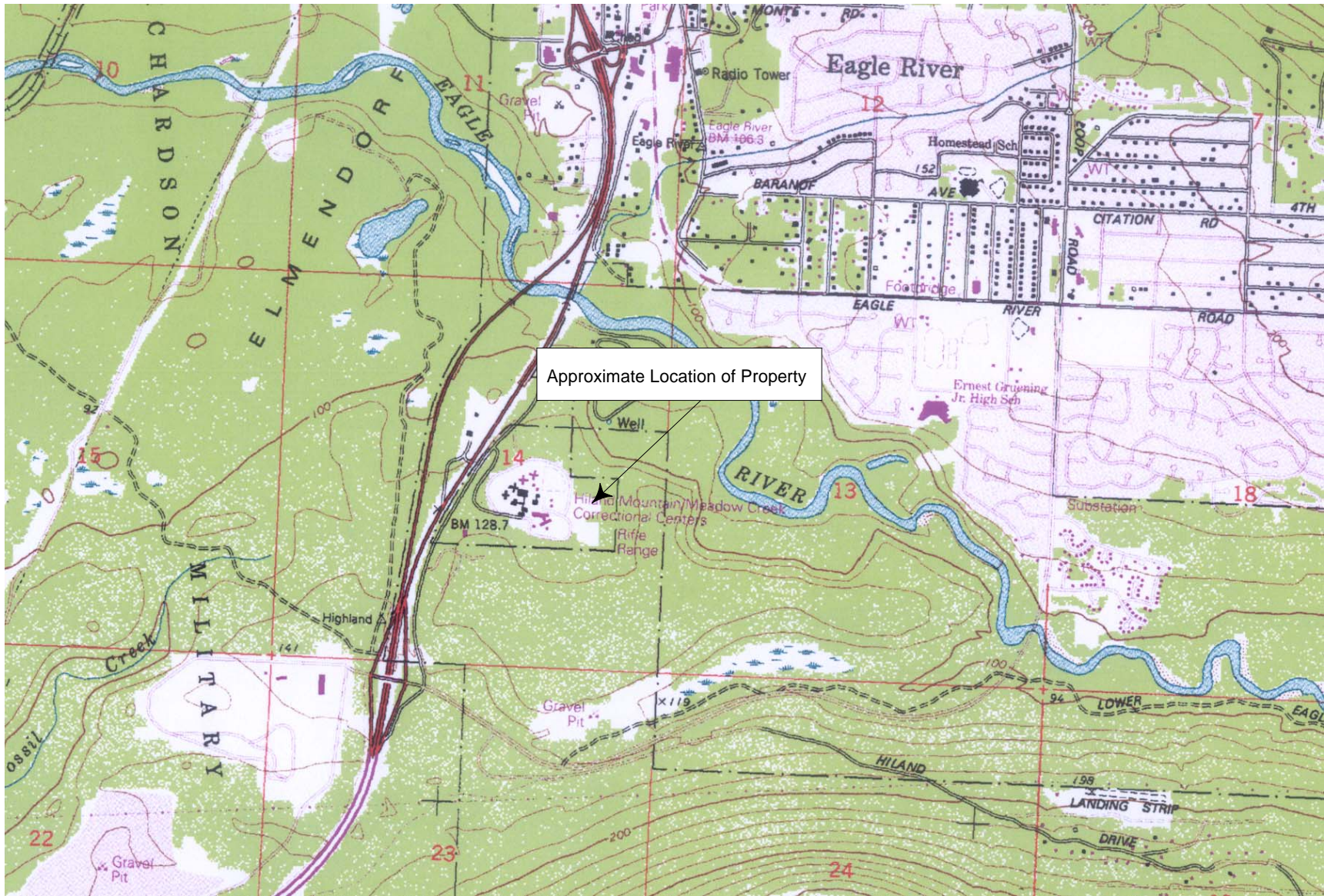
*	Sample analyzed by the project laboratory (See Table 2)
bgs	Below ground surface

TABLE 2 - SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level**	Sample ID Number†, and Collection Depth in Inches (See Table 1, Figure 3, and Attachment 2)							
			Grid Samples				Berm Backstop Samples		Target Line Samples	
			SS5 0-4	SS11 0-4	SS16 0-4	SS21 0-4	SS30 0-8	SS32 0-6	SS38 0-12	SS40 0-12
Total Metals										
Arsenic - mg/kg	EPA 6020	3.9 mg/kg	-	-	-	-	-	-	8.12	27.8
Barium - mg/kg	EPA 6020	1,100 mg/kg	-	-	-	-	-	-	77.4	74.2
Cadmium - mg/kg	EPA 6020	5 mg/kg	-	-	-	-	-	-	<0.189	<0.194
Chromium - mg/kg	EPA 6020	25 mg/kg	-	-	-	-	-	-	66.5	28.9
Lead - mg/kg	EPA 6020	400 mg/kg	427	1,760^	73.6	353	41,900^	49,800^	1,860^	27,300^
Mercury - mg/kg	EPA 6020	1.4 mg/kg	-	-	-	-	-	-	0.0403	<0.0393
Selenium - mg/kg	EPA 6020	3.4 mg/kg	-	-	-	-	-	-	<0.472	<0.484
Silver - mg/kg	EPA 6020	11.2 mg/kg	-	-	-	-	-	-	0.144	0.788
TCLP Metals										
Arsenic - mg/L	EPA 6010B	5 mg/L	-	-	-	-	-	-	<0.500	<0.500
Barium - mg/L	EPA 6010B	100 mg/L	-	-	-	-	-	-	0.739	0.844
Cadmium - mg/L	EPA 6010B	1 mg/L	-	-	-	-	-	-	<0.0500	<0.0500
Chromium- mg/L	EPA 6010B	5 mg/L	-	-	-	-	-	-	<0.200	<0.200
Lead - mg/L	EPA 6010B	5 mg/L	20.8	3.66	<0.500	2.51	684	329	68.8	121
Mercury - mg/L	EPA 6010B	0.2 mg/L	-	-	-	-	-	-	<0.00200	<0.00200
Selenium- mg/L	EPA 6010B	1 mg/L	-	-	-	-	-	-	<1.00	<1.00
Silver - mg/L	EPA 6010B	5 mg/L	-	-	-	-	-	-	<0.200	<0.200


KEY DESCRIPTION

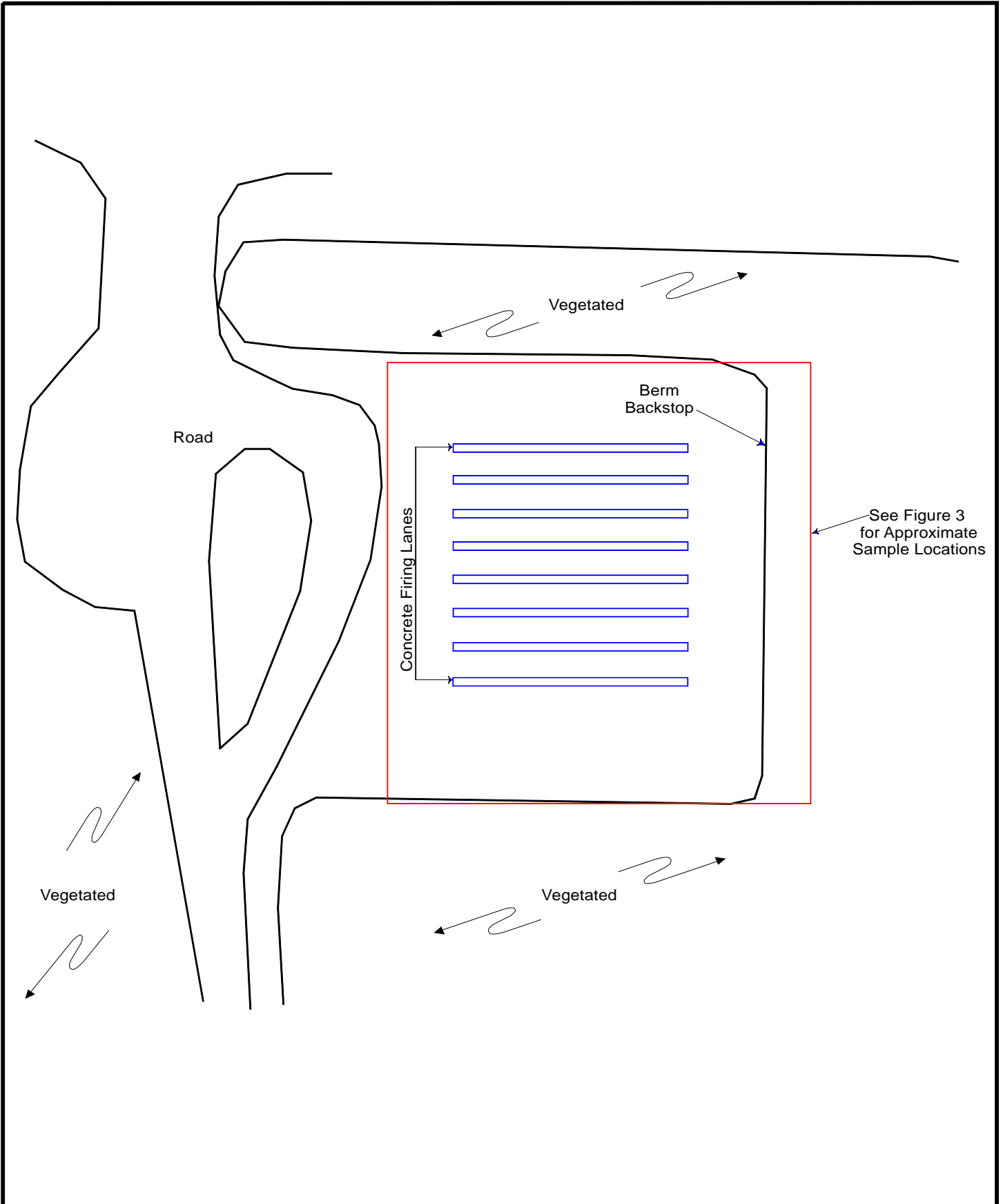
†	Sample identification preceded by "32-1-17294" on the chain of custody forms
*	See Attachment 2 for compounds tested, methods, and laboratory reporting limits
**	Total metals soil cleanup level is listed in Table B1, 18 AAC 75 (October 9, 2008) for the "under 40 inches (precipitation) zone" and residential land use
**	Toxicity characteristic leaching procedure (TCLP) lead cleanup level is the Resource Conservation and Recovery Act (RCRA) characteristic waste limit listed in 40 CFR 261 (July 1, 2008)
^	Concentration exceeds both residential cleanup level (400 mg/kg) and commercial /industrial cleanup level (800 mg/kg) for ingestion and inhalation exposure routes
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
427	Analytical result exceeds regulated cleanup level
<0.500	Analyte not detected; laboratory reporting limit was 0.500
<1.00	Reporting limit equals or exceeds regulated cleanup level
-	Not applicable or not analyzed



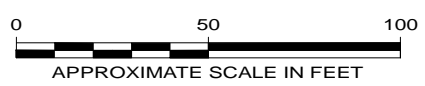
Elevation in Meters
 Contour Interval 20 Meters
 Taken from Anchorage B-7 SW
 U.S. Geological Survey Quadrangles



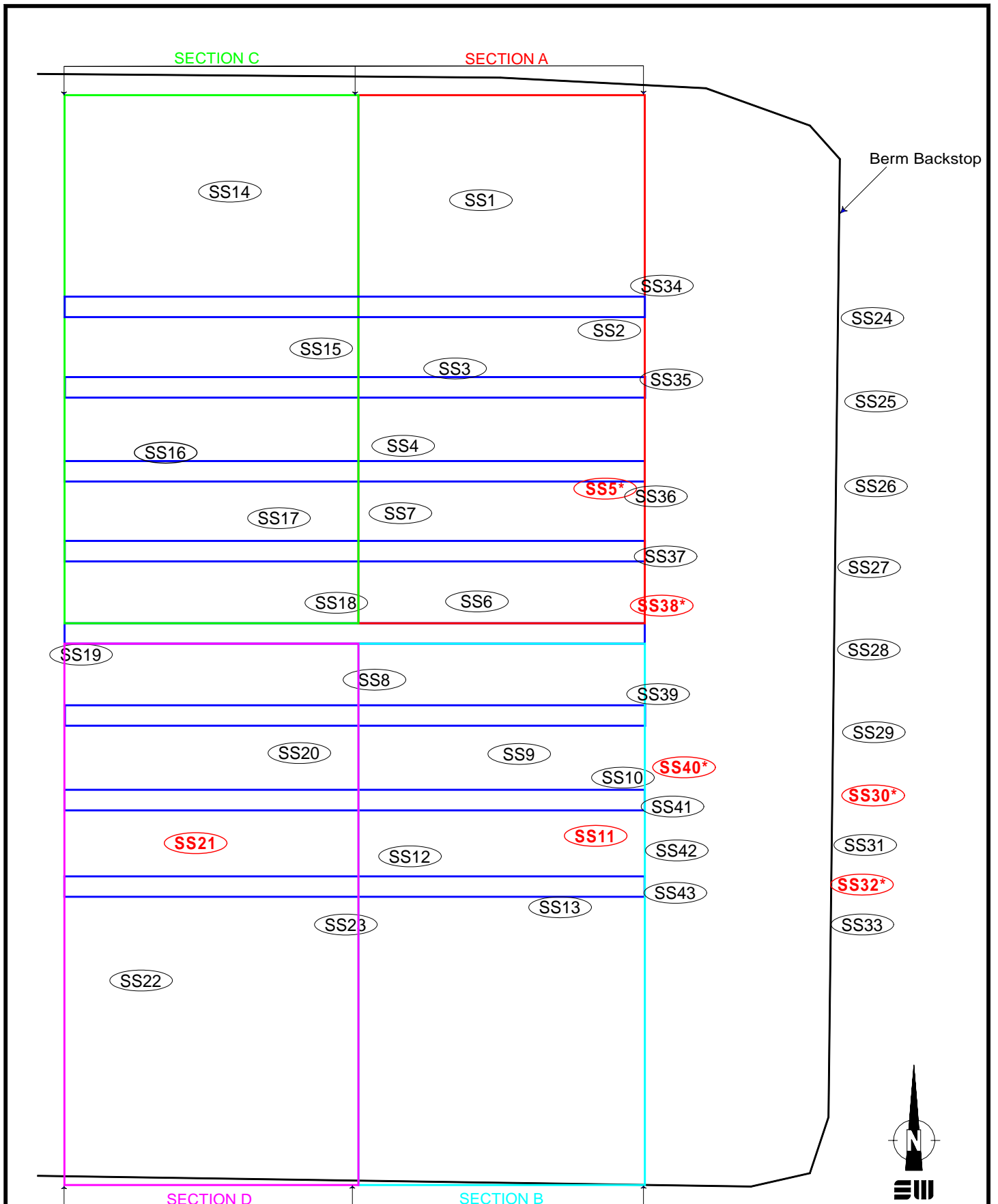
Hiland Mountain Correctional Center Eagle River, Alaska	
VICINITY MAP	
July 2009	32-1-17294-001
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	Fig. 1



See Figure 3
for Approximate
Sample Locations



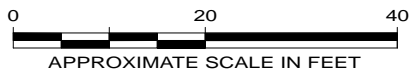
Hiland Mountain Correctional Center Eagle River, Alaska	
SITE PLAN	
July 2009	32-1-17294-001
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	Fig. 2



LEGEND

- (SS37) Screening Soil Sample SS37
- (SS16) Analytical Soil Sample SS16
- (SS38*) Analytical Soil Sample SS38; Reported lead concentration exceeds ADEC Cleanup Level. Asterisk indicates sample also exceeds RCRA Cleanup Level

Note: Soil samples were collected on April 28, 2009.



Hiland Mountain Correctional Center
Eagle River, Alaska

SAMPLE LOCATIONS

July 2009

32-1-17294-001

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 3

ATTACHMENT 1

PHOTO PAGES



Photo 1: Looking east at the former firing range from the west side of the firing lanes. (April 28, 2009)



Photo 2: Dilapidated target. (April 28, 2009)



Photo 3: Spent ammunition. (April 28, 2009)



Photo 4: Spent ammunition. (April 28, 2009)

ATTACHMENT 2

ANALYTICAL RESULTS FROM SGS ENVIRONMENTAL SERVICES

AND

ADEC DATA REVIEW CHECKLIST



SGS North America Inc.
Alaska Division
Level II Laboratory Data Report

Project: 32-1-17294 Highland Mtn
Client: Shannon & Wilson Inc.
SGS Work Order: 1091642

Released by:

Contents:

Cover Page
Case Narrative
Final Report Pages
Quality Control Summary Forms
Chain of Custody/Sample Receipt Forms

Note:
Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the standards set forth by the proper regulatory authority, the SGS Quality Assurance Program Plan, and the National Environmental Accreditation Conference.



Case Narrative

Client SHANNOT Shannon & Wilson Inc.
Workorder 1091642 32-1-17294 Highland Mtn

Printed Date/Time 5/19/2009 10:50

Sample ID **Client Sample ID**

Refer to the sample receipt form for information on sample condition.

1091642016 PS 32-1-17294 SS40
6010B - The PQL for arsenic was raised due to matrix interference.

894029 MS 32-1-17294 SS16(1091642003MS)
6020 - MS recovery for barium is outside of acceptance criteria. Post-digestion spike was successful.

894030 MSD 32-1-17294 SS16(1091642003MSD)
6020 - MSD recovery for barium is outside of acceptance criteria. Post-digestion spike was successful.

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.us.sgs.com>

Shayla Swedlund
Shannon & Wilson Inc.
5430 Fairbanks St Ste 3
Anchorage, AK 99518

Work Order:	1091642	
	32-1-17294 Highland Mtn	Released by:
Client:	Shannon & Wilson Inc.	
Report Date:	May 19, 2009	

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request.

The laboratory certification numbers are AK971-05 (DW), UST-005 (CS) and AK00971 (Micro) for ADEC and AK100001 for NELAP (RCRA methods: 1020A, 1311, 6010B, 7470A, 7471A, 9040B, 9045C, 9056, 9060, 9065, 8015B, 8021B, 8081A/8082, 8260B, 8270C).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP, the National Environmental Laboratory Accreditation Program and, when applicable, other regulatory authorities.

If you have any questions regarding this report or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is being provided under SGS general terms and conditions (http://www.sgs.com/terms_and_conditions.htm) unless other written agreements have been accepted by both parties.

PQL	Practical Quantitation Limit (reporting limit).
U	Indicates the analyte was analyzed for but not detected.
F	Indicates value that is greater than or equal to the MDL.
J	The quantitation is an estimation.
ND	Indicates the analyte is not detected.
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
GT	Greater Than
D	The analyte concentration is the result of a dilution.
LT	Less Than
!	Surrogate out of control limits.
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
JL	The analyte was positively identified, but the quantitation is a low estimation.
E	The analyte result is above the calibrated range.
R	Rejected

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.



SGS Ref.# 1091642001
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS5
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:00
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Metals by ICP/MS</u>									
Lead	427	0.197	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642002
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS11
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:07
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Metals by ICP/MS</u>									
Lead	1760	0.978	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642003
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS16
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:35
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Metals by ICP/MS</u>									
Lead	73.6	0.193	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642004
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS21
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:40
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Metals by ICP/MS</u>									
Lead	353	0.193	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642005
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS30
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 13:30
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Metals by ICP/MS</u>									
Lead	41900	19.7	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642006
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS32
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 13:35
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Metals by ICP/MS</u>									
Lead	49800	39.7	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642007
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS38
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 14:00
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Metals Department</u>									
Mercury	40.3	39.8	ug/Kg	SW7471B	A		05/09/09	05/09/09	RTS
<u>Metals by ICP/MS</u>									
Arsenic	8.12	0.944	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Barium	77.4	0.283	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Cadmium	ND	0.189	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Chromium	66.5	0.378	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Lead	1860	0.944	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Selenium	ND	0.472	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Silver	0.144	0.0944	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642008
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS40
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 14:05
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
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Metals Department

Mercury	ND	39.3	ug/Kg	SW7471B	A		05/09/09	05/09/09	RTS
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Metals by ICP/MS

Arsenic	27.8	0.969	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Barium	74.2	0.291	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Cadmium	ND	0.194	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Chromium	28.9	0.388	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Lead	27300	19.4	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Selenium	ND	0.484	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB
Silver	0.788	0.0969	mg/Kg	SW6020	A		05/08/09	05/13/09	NRB



SGS Ref.# 1091642009
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS5
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:00
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Characterization</u>									
Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS
<u>TCLP Constituents Metals</u>									
Lead	20.8	* 0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 1091642010
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS11
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:07
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Characterization</u>									
Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS
<u>TCLP Constituents Metals</u>									
Lead	3.66	0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 1091642011
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS16
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:35
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Characterization</u>									
Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS
<u>TCLP Constituents Metals</u>									
Lead	ND	0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 1091642012
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS21
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 12:40
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Characterization</u>									
Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS
<u>TCLP Constituents Metals</u>									
Lead	2.51	0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 1091642013
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS30
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 13:30
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Characterization</u>									
Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS
<u>TCLP Constituents Metals</u>									
Lead	684	* 0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 1091642014
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS32
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 13:35
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Characterization</u>									
Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS
<u>TCLP Constituents Metals</u>									
Lead	329	* 0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 1091642015
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS38
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 14:00
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Characterization</u>									
Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS
<u>TCLP Constituents Metals</u>									
Arsenic	ND	0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR
Barium	0.739	0.500	mg/L	SW6010B TCLP	A	(<100)	05/14/09	05/18/09	KAR
Cadmium	ND	0.0500	mg/L	SW6010B TCLP	A	(<1)	05/14/09	05/18/09	KAR
Chromium	ND	0.200	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR
Lead	68.8	* 0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR
Mercury	ND	0.00200	mg/L	SW7470A TCLP	A	(<0.2)	05/13/09	05/13/09	RTS
Selenium	ND	1.00	mg/L	SW6010B TCLP	A	(<1)	05/14/09	05/18/09	KAR
Silver	ND	0.200	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 1091642016
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Client Sample ID 32-1-17294 SS40
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 05/19/2009 10:50
Collected Date/Time 04/28/2009 14:05
Received Date/Time 04/28/2009 15:40
Technical Director Stephen C. Ede

Sample Remarks:

6010B - The PQL for arsenic was raised due to matrix interference.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
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Characterization

Aqueous Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Oil Phase, Total	0.0		%	TCLP	A			05/05/09	BJS
Solid Phase, Total	100		%	TCLP	A			05/05/09	BJS

TCLP Constituents Metals

Arsenic	ND	5.00	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR
Barium	0.844	0.500	mg/L	SW6010B TCLP	A	(<100)	05/14/09	05/18/09	KAR
Cadmium	ND	0.0500	mg/L	SW6010B TCLP	A	(<1)	05/14/09	05/18/09	KAR
Chromium	ND	0.200	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR
Lead	121	* 0.500	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR
Mercury	ND	0.00200	mg/L	SW7470A TCLP	A	(<0.2)	05/13/09	05/13/09	RTS
Selenium	ND	1.00	mg/L	SW6010B TCLP	A	(<1)	05/14/09	05/18/09	KAR
Silver	ND	0.200	mg/L	SW6010B TCLP	A	(<5)	05/14/09	05/18/09	KAR



SGS Ref.# 893983 Method Blank
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Soil/Solid (dry weight)

Printed Date/Time 05/19/2009 10:50
Prep Batch MXX21642
Method METHOD
Date 05/09/2009

QC results affect the following production samples:
1091642007, 1091642008

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
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Metals Department

Mercury	ND	40.0	12.0	ug/Kg	05/09/09
Batch	MCV4171				
Method	SW7471B				
Instrument	PSA Millennium mercury AA				



SGS Ref.# 894027 Method Blank
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Soil/Solid (dry weight)

Printed Date/Time 05/19/2009 10:50
Prep Batch MXX21644
Method SW3050B
Date 05/08/2009

QC results affect the following production samples:

1091642001, 1091642002, 1091642003, 1091642004, 1091642005, 1091642006, 1091642007, 1091642008

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Metals by ICP/MS					
Arsenic	ND	1.00	0.310	mg/Kg	05/13/09
Barium	ND	0.300	0.0940	mg/Kg	05/13/09
Cadmium	ND	0.200	0.0620	mg/Kg	05/13/09
Chromium	0.170 J	0.400	0.120	mg/Kg	05/13/09
Lead	ND	0.200	0.0620	mg/Kg	05/13/09
Selenium	ND	0.500	0.150	mg/Kg	05/13/09
Silver	ND	0.100	0.0310	mg/Kg	05/13/09

Batch MMS5903
Method SW6020
Instrument Perkin Elmer Sciex ICP-MS P3



SGS Ref.# 894596 Method Blank
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 05/19/2009 10:50
Prep Batch MXX21660
Method METHOD
Date 05/13/2009

QC results affect the following production samples:
1091642015, 1091642016

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
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Metals Department

Mercury	ND	0.000200	0.0000620	mg/L	05/13/09
Batch	MCV4175				
Method	SW7470A TCLP				
Instrument	PSA Millennium mercury AA				



SGS Ref.# 895041 Method Blank
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 05/19/2009 10:50
Prep Batch MXT4208
Method SW3010A
Date 05/14/2009

QC results affect the following production samples:

1091642009, 1091642010, 1091642011, 1091642012, 1091642013, 1091642014, 1091642015, 1091642016

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
<u>TCLP Constituents Metals</u>					
Arsenic	ND	0.0500	0.0150	mg/L	05/18/09
Barium	ND	0.0500	0.0155	mg/L	05/18/09
Cadmium	0.00151 J	0.00500	0.00150	mg/L	05/18/09
Chromium	ND	0.0200	0.00620	mg/L	05/18/09
Lead	ND	0.0500	0.0250	mg/L	05/18/09
Selenium	ND	0.100	0.0500	mg/L	05/18/09
Silver	ND	0.0200	0.00620	mg/L	05/18/09

Batch MIP5775
Method SW6010B TCLP
Instrument TJA Enviro II ICP P2



SGS Ref.# 893984 Lab Control Sample

Printed Date/Time 05/19/2009 10:50
Prep Batch MXX21642
Method METHOD
Date 05/09/2009

Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Soil/Solid (dry weight)

QC results affect the following production samples:
1091642007, 1091642008

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
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Metals Department

Mercury LCS 159 95 (80-120) 167 ug/Kg 05/09/2009

Batch MCV4171
Method SW7471B
Instrument PSA Millennium mercury AA



SGS Ref.# 894028 Lab Control Sample
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Soil/Solid (dry weight)

Printed Date/Time 05/19/2009 10:50
Prep Batch MXX21644
Method SW3050B
Date 05/08/2009

QC results affect the following production samples:

1091642001, 1091642002, 1091642003, 1091642004, 1091642005, 1091642006, 1091642007, 1091642008

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
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Metals by ICP/MS

Arsenic	LCS	53.2	106	(80-120)		50 mg/Kg	05/13/2009
Barium	LCS	49.8	100	(80-120)		50 mg/Kg	05/13/2009
Cadmium	LCS	5.35	107	(80-120)		5 mg/Kg	05/13/2009
Chromium	LCS	20.5	102	(80-120)		20 mg/Kg	05/13/2009
Lead	LCS	53.8	108	(80-120)		50 mg/Kg	05/13/2009
Selenium	LCS	51.6	103	(80-120)		50 mg/Kg	05/13/2009
Silver	LCS	5.59	112	(80-120)		5 mg/Kg	05/13/2009

Batch MMS5903
Method SW6020
Instrument Perkin Elmer Sciex ICP-MS P3



SGS Ref.# 894597 Lab Control Sample

Printed Date/Time 05/19/2009 10:50
Prep Batch MXX21660
Method METHOD
Date 05/13/2009

Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Water (Surface, Eff., Ground)

QC results affect the following production samples:

1091642015, 1091642016

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
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Metals Department

Mercury LCS 0.00415 104 (85-115) 0.00400 mg/L 05/13/2009

Batch MCV4175
Method SW7470A TCLP
Instrument PSA Millennium mercury AA



SGS Ref.# 895042 Lab Control Sample
Client Name Shannon & Wilson Inc.
Project Name/# 32-1-17294 Highland Mtn
Matrix Water (Surface, Eff., Ground)

Printed Date/Time 05/19/2009 10:50
Prep Batch MXT4208
Method SW3010A
Date 05/14/2009

QC results affect the following production samples:

1091642009, 1091642010, 1091642011, 1091642012, 1091642013, 1091642014, 1091642015, 1091642016

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
<u>TCLP Constituents Metals</u>							
Arsenic	LCS 0.981	98	(80-120)			1 mg/L	05/18/2009
Barium	LCS 0.968	97	(80-120)			1 mg/L	05/18/2009
Cadmium	LCS 0.108	108	(80-120)			0.1 mg/L	05/18/2009
Chromium	LCS 0.408	102	(80-120)			0.4 mg/L	05/18/2009
Lead	LCS 1.06	106	(80-120)			1 mg/L	05/18/2009
Selenium	LCS 0.962	96	(80-120)			1 mg/L	05/18/2009
Silver	LCS 0.103	103	(80-120)			0.1 mg/L	05/18/2009

Batch MIP5775
Method SW6010B TCLP
Instrument TJA Enviro II ICP P2



SGS Ref.# 893985 Matrix Spike
893986 Matrix Spike Duplicate

Printed Date/Time 05/19/2009 10:50
Prep Batch MXX21642
Method Digestion Mercury (S)
Date 05/09/2009

Original 1091642007
Matrix Solid/Soil (Wet Weight)

QC results affect the following production samples:
1091642007, 1091642008

Parameter	Qualifiers	Original Result	QC Result	Pet Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
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Metals Department

Mercury	MS	40.3	330	88	(80-120)			328 ug/Kg	05/09/2009
	MSD		325	87		2	(< 20)	329 ug/Kg	05/09/2009

Batch MCV4171
Method SW7471B
Instrument PSA Millennium mercury AA



SGS Ref.#	894029	Matrix Spike	Printed Date/Time	05/19/2009 10:50
	894030	Matrix Spike Duplicate	Prep	Batch
			Method	MXX21644
			Date	Soils/Solids Digest for Metals b
Original	1091642003			05/08/2009
Matrix	Solid/Soil (Wet Weight)			

QC results affect the following production samples:

1091642001, 1091642002, 1091642003, 1091642004, 1091642005, 1091642006, 1091642007, 1091642008

Parameter	Qualifiers	Original Result	QC Result	Pet Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
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Metals by ICP/MS

Lead	MS	73.6	129	112	(80-120)			49.1 mg/Kg	05/13/2009
	MSD		124	105		3	(< 20)	48.4 mg/Kg	05/13/2009

Batch MMS5903
Method SW6020
Instrument Perkin Elmer Sciex ICP-MS P3



SGS Ref.# 894598 Matrix Spike
 894599 Matrix Spike Duplicate

Printed Date/Time 05/19/2009 10:50
 Prep Batch MXX21660
 Method Digestion Mercury (W)
 Date 05/13/2009

Original 1091642015
 Matrix Solid/Soil (Wet Weight)

QC results affect the following production samples:
 1091642015, 1091642016

Parameter	Qualifiers	Original Result	QC Result	Pet Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
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Metals Department

Mercury	MS	ND	0.0766	96	(85-115)			0.0800	mg/L 05/13/2009
	MSD		0.0770	96		1	(< 15)	0.0800	mg/L 05/13/2009

Batch MCV4175
 Method SW7470A TCLP
 Instrument PSA Millennium mercury AA



SGS Ref.# 895252 Matrix Spike **Printed Date/Time** 05/19/2009 10:50
 895253 Matrix Spike Duplicate **Prep Batch** MXT4208
Method Waters Digest for Metals by ICI
Date 05/14/2009
Original 1091658001
Matrix Solid/Soil (Wet Weight)

QC results affect the following production samples:

1091642009, 1091642010, 1091642011, 1091642012, 1091642013, 1091642014, 1091642015, 1091642016

Parameter	Qualifiers	Original Result	QC Result	Pet Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
<u>TCLP Constituents Metals</u>									
Arsenic	MS	0.150 J	10.3	101	(50-125)			10.0	mg/L 05/18/2009
	MSD		9.97	98		3	(< 20)	10.0	mg/L 05/18/2009
Barium	MS	1.44	10.8	93	(50-125)			10.0	mg/L 05/18/2009
	MSD		10.9	94		1	(< 20)	10.0	mg/L 05/18/2009
Chromium	MS	ND	4.21	105	(50-125)			4.00	mg/L 05/18/2009
	MSD		4.20	105		0	(< 20)	4.00	mg/L 05/18/2009
Lead	MS	ND	11	110	(50-125)			10.0	mg/L 05/18/2009
	MSD		10.8	108		1	(< 20)	10.0	mg/L 05/18/2009
Selenium	MS	ND	10.1	101	(50-125)			10.0	mg/L 05/18/2009
	MSD		10.6	106		5	(< 20)	10.0	mg/L 05/18/2009
Batch	MIP5775								
Method	SW6010B TCLP								
Instrument	TJA Enviro II ICP P2								

Geri, Heidi (Anchorage)

From: Shayla Swedlund [SIS@shanwil.com]
Sent: Tuesday, May 05, 2009 10:46 AM
To: Geri, Heidi (Anchorage)
Subject: RE: Yes

Nope. Those samples are Pb only. Samples 7 and 8 are RCRA, including Hg...

shayla

From: Geri, Heidi (Anchorage) [mailto:Heidi.Geri@sgs.com]
Sent: Tuesday, May 05, 2009 10:43 AM
To: Shayla Swedlund
Subject: RE: Yes
Importance: High

Hi Shayla,

RCRA is only listed for samples # 7 and # 8.

Samples 1 – 6 are also requesting 7470. Do you also want mercury run on the 6 samples labeled 'Total & Leachable Pb EPA 6020/7470/1311' Please find attached COC.

Thank you,

Heidi

Heidi Geri, BS

Alaska Division Project Manager
SGS North America Inc.
200 W Potter Drive
Anchorage, AK 99518
Phone: (907) 562-2343
Direct: (907) 550-3211
Fax: (907) 561-5301
e-mail: heidi.geri@SGS.com

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From: Shayla Swedlund [mailto:SIS@shanwil.com]
Sent: Tuesday, May 05, 2009 10:25 AM
To: Geri, Heidi (Anchorage)
Subject: Yes

Please test for Hg under the RCRA metals for the Highland Mtn samples....

Thanks.

Shayla Swedlund
Environmental Scientist III
Shannon & Wilson
5430 Fairbanks Street, Suite 3

Anchorage, AK 99518

(907) 561-2120 - phone

(907) 561-4483 - fax

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1091642



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

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303 Welisian Way Richland, WA 99352 (509) 946-6309

CHAIN-OF-CUSTODY RECORD

Analysis Parameters/Sample Container Description
(Include preservative if used)

Total # Containers		Total # Containers	
Total # Containers		Total # Containers	

Sample Identity	Lab No.	Time	Date Sampled	Comp. Grab	Remarks/Matrix
32-1-17294 SS5	① A 9A	1200	4/28/09	X	SOIL
32-1-17294 SS11	② 10	1207		X	
32-1-17294 SS16	③ 11	1235		X	
32-1-17294 SS21	④ 12	1240		X	
32-1-17294 SS30	⑤ 13	1330		X	
32-1-17294 SS32	⑥ 14	1335		X	
32-1-17294 SS38	⑦ 15	1400		X	
32-1-17294 SS40	⑧ 16	1405		X	

Page 1 of 1
Laboratory: SGS
Attn: Heidi Gen

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Project Number: 32-1-17294	Total Number of Containers	Signature: [Signature]	Signature: _____	Signature: _____
Project Name: Highland Mtn	COC Seals/Intact? Y/N/NA	Printed Name: Shyla Svedlund	Printed Name: _____	Printed Name: _____
Contact: Shyla Svedlund	Received Good Cond./Cold	Company: Shannon & Wilson	Company: _____	Company: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method:	Time: 1540	Time: _____	Time: _____
Sampler: Shyla Svedlund	(attach shipping bill, if any)	Date: 4/28/09	Date: _____	Date: _____
Instructions				
Requested Turnaround Time: Standard TAT		Signature: [Signature]	Signature: [Signature]	Signature: [Signature]
Special Instructions:		Printed Name: Shyla Svedlund	Printed Name: _____	Printed Name: Joe Rud.
		Company: Shannon & Wilson	Company: _____	Company: SGS



SAMPLE RECEIPT FORM

SGS WO#:

Yes No NA

- Are samples RUSH, priority or w/in 72 hrs of hold time?
If yes, have you done e-mail ALERT notification?
Are samples within 24 hrs. of hold time or due date?
If yes, have you also spoken with supervisor?
Archiving bottles: Are lids marked w/ red "X"?
Were samples collected with proper preservative?
Any problems (ID, cond 'n, HT, etc)? Explain:

- If this is for PWS, provide PWSID:
Payment received: \$ by Check or Credit Card
Will courier charges apply?
Data package required? (Level: 1 / 2 / 3 / 4)
Notes:
Is this a DoD project? (USACE, Navy, AFCEE)

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

- Is received temperature <= 6C?
Were containers ice-free?
Was there an airbill?
Was cooler sealed with custody seals & were they intact?
Was there a COC with cooler?
Was COC sealed in plastic bag & taped inside lid of cooler?
Was the COC filled out properly?
Did the COC indicate USACE / Navy / AFCEE project?
Samples were packed to prevent breakage with (circle one):
Were all samples sealed in separate plastic bags?
Were all VOCs free of headspace and/or MeOH preserved?
Were correct container / sample sizes submitted?
Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

TAT (circle one): Standard -or- Rush
Received Date: 4-28-09
Received Time: 1540
Thermometer ID: 70d
Cooler ID Temp Blank Cooler Temp

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):

- Client / Alert Courier / Lynden / SGS
UPS / FedEx / USPS / DHL / Carlile
AkAir Goldstreak / NAC / ERA / PenAir
Other:

Additional Sample Remarks: (if applicable)

- Extra Sample Volume?
Limited Sample Volume?
Multi-Incremental Samples?
Lab-filtered for dissolved
Ref Lab required for
Foreign Soil?

This section must be completed if problems are noted.

- Was client notified of problems? Yes / No
By (SGS PM):
Individual contacted:
Via: Phone / Fax / E-mail (circle one)
Date/Time:
Reason for contact:
Change Order Required? Yes / No

Notes:

Completed by (sign): [Signature] (print): JAMES POGGITY
Login proof: Self-check completed Peer-reviewer's Initials JSR



SGS WO#:

SAMPLE RECEIPT FORM (page 2)

#	Container ID	Matrix	Test	QC	TB	Container Volume							Container Type							Preservative								Notes *							
						1L	500 mL	250 mL or 8oz	125 mL or 4oz	60 mL	40 mL	Other	AG	CG	HDPB	Nalgene	Coll	Septa	Other	None	HCl	HNO ₃	H ₂ SO ₄	MeOH	Na ₂ S ₂ O ₃	NaOH	NaOH+ZnAc		Other (specify)						
1-6	A	Blank	TOTAL TRIP CERAMIC P6					6																											
7,8	A	Blank	TOTAL CERAMIC RCA F-NISTH					2																											
9-16	A		TCLP					8																											

Bottle Totals

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106.

Completed by: Date: 4.18.09

SGS Environmental Services

TCLP SAMPLE CHARACTERIZATION

HSN#: 1642-1a Date: 5/5/09 Analyst: [Signature]
Sample Vol. (mL): 250 Container Volume (mL): 250

Top _____ % (xylene miscible) Description / Notes: _____
Middle _____ % (water miscible) Description / Notes: _____
Bottom 100 % (solids) Description / Notes: Moist Sludge

Percent Solids Determination:

Original Sample & Container weight (g): _____	Solid % of sample: _____
Empty Original Container weight (g): _____	Liquid % of sample: _____
Clean Container weight (g): _____	Weight solids extracted (g): _____
Original Sample weight (g): _____	Extraction Fluid: _____
Filter weight (g): _____	Vol. Original Liquid Added Back (mL) _____
Clean Container & Liquid weight (g): _____	Liquid Volume (mL): _____
Liquid weight (g): _____	
Filter & Solid Sample weight (g): _____	
Solid weight (g): _____	

Notes: _____

HSN#: 1642-2a Date: 5/5/09 Analyst: [Signature]
Sample Volume (mL): 250 Container Volume (mL): 250

Top _____ % (xylene miscible) Description / Notes: _____
Middle _____ % (water miscible) Description / Notes: _____
Bottom 100 % (solids) Description / Notes: Moist Sludge

Percent Solids Determination:

Original Sample & Container weight (g): _____	Solid % of sample: _____
Empty Original Container weight (g): _____	Liquid % of sample: _____
Clean Container weight (g): _____	Weight solids extracted (g): _____
Original Sample weight (g): _____	Extraction Fluid: _____
Filter weight (g): _____	Vol. Original Liquid Added Back (mL) _____
Clean Container & Liquid weight (g): _____	Liquid Volume (mL): _____
Liquid weight (g): _____	
Filter & Solid Sample weight (g): _____	
Solid weight (g): _____	

Notes: _____

SGS Environmental Services

TCLP SAMPLE CHARACTERIZATION

HSN#: 1642-3a Date: 5/5/09 Analyst: BJS

Sample Vol. (mL): Container Volume (mL): 250
Top % (xylene miscible) Description / Notes:
Middle % (water miscible) Description / Notes:
Bottom 100 % (solids) Description / Notes: Brown mud

Percent Solids Determination:

Original Sample & Container weight (g): Solid % of sample:
Empty Original Container weight (g): Liquid % of sample:
Clean Container weight (g): Weight solids extracted (g):
Original Sample weight (g): Extraction Fluid:
Filter weight (g): Vol. Original Liquid Added Back (mL):
Clean Container & Liquid weight (g): Liquid Volume (mL):
Liquid weight (g):
Filter & Solid Sample weight (g):
Solid weight (g):

Notes:

HSN#: 1642-4a Date: 5/5/09 Analyst: BJS

Sample Volume (mL): 250 Container Volume (mL): 250
Top % (xylene miscible) Description / Notes:
Middle % (water miscible) Description / Notes:
Bottom 100 % (solids) Description / Notes: Sludge

Percent Solids Determination:

Original Sample & Container weight (g): Solid % of sample:
Empty Original Container weight (g): Liquid % of sample:
Clean Container weight (g): Weight solids extracted (g):
Original Sample weight (g): Extraction Fluid:
Filter weight (g): Vol. Original Liquid Added Back (mL):
Clean Container & Liquid weight (g): Liquid Volume (mL):
Liquid weight (g):
Filter & Solid Sample weight (g):
Solid weight (g):

Notes:

SGS Environmental Services

TCLP SAMPLE CHARACTERIZATION

HSN#: 1642-5a Date: 5/5/09 Analyst: [Signature]

Sample Vol. (mL): 250 Container Volume (mL): 250

Top _____ % (xylene miscible) Description / Notes: _____

Middle _____ % (water miscible) Description / Notes: _____

Bottom 100 % (solids) Description / Notes: Wet Sledge

Percent Solids Determination:

Original Sample & Container weight (g): _____ Solid % of sample: _____
Empty Original Container weight (g): _____ Liquid % of sample: _____
Clean Container weight (g): _____ Weight solids extracted (g): _____
Original Sample weight (g): _____ Extraction Fluid: _____
Filter weight (g): _____ Vol. Original Liquid Added Back (mL): _____
Clean Container & Liquid weight (g): _____ Liquid Volume (mL): _____
Liquid weight (g): _____
Filter & Solid Sample weight (g): _____
Solid weight (g): _____

Notes: _____

HSN#: 1642-6a Date: 5/5/09 Analyst: [Signature]

Sample Volume (mL): 250 Container Volume (mL): 250

Top _____ % (xylene miscible) Description / Notes: _____

Middle _____ % (water miscible) Description / Notes: _____

Bottom 100 % (solids) Description / Notes: Mud, rocks

Percent Solids Determination:

Original Sample & Container weight (g): _____ Solid % of sample: _____
Empty Original Container weight (g): _____ Liquid % of sample: _____
Clean Container weight (g): _____ Weight solids extracted (g): _____
Original Sample weight (g): _____ Extraction Fluid: _____
Filter weight (g): _____ Vol. Original Liquid Added Back (mL): _____
Clean Container & Liquid weight (g): _____ Liquid Volume (mL): _____
Liquid weight (g): _____
Filter & Solid Sample weight (g): _____
Solid weight (g): _____

Notes: _____

SGS Environmental Services

TCLP SAMPLE CHARACTERIZATION

HSN#: 16427a Date: 5/5/09 Analyst: AS
Sample Vol. (mL): 250 Container Volume (mL): 250
Top _____ % (xylene miscible) Description / Notes: _____
Middle _____ % (water miscible) Description / Notes: _____
Bottom 100 % (solids) Description / Notes: Wet mud

Percent Solids Determination:

Original Sample & Container weight (g):	_____	Solid % of sample:	_____
Empty Original Container weight (g):	_____	Liquid % of sample:	_____
Clean Container weight (g):	_____	Weight solids extracted (g):	_____
Original Sample weight (g):	_____	Extraction Fluid:	_____
Filter weight (g):	_____	Vol. Original Liquid Added Back (mL)	_____
Clean Container & Liquid weight (g):	_____	Liquid Volume (mL):	_____
Liquid weight (g):	_____		
Filter & Solid Sample weight (g):	_____		
Solid weight (g):	_____		

Notes:

HSN#: 1642-8a Date: 5/5/09 Analyst: AS
Sample Volume (mL): 250 Container Volume (mL): 250
Top _____ % (xylene miscible) Description / Notes: _____
Middle _____ % (water miscible) Description / Notes: _____
Bottom 100 % (solids) Description / Notes: Muddy roots

Percent Solids Determination:

Original Sample & Container weight (g):	_____	Solid % of sample:	_____
Empty Original Container weight (g):	_____	Liquid % of sample:	_____
Clean Container weight (g):	_____	Weight solids extracted (g):	_____
Original Sample weight (g):	_____	Extraction Fluid:	_____
Filter weight (g):	_____	Vol. Original Liquid Added Back (mL)	_____
Clean Container & Liquid weight (g):	_____	Liquid Volume (mL):	_____
Liquid weight (g):	_____		
Filter & Solid Sample weight (g):	_____		
Solid weight (g):	_____		

Notes:

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Hiland Mountain Correctional Center, Eagle River, AK

Date: July 2009

Laboratory Report Date: 5/1/2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Shayla Swedlund

Title: Environmental Scientist III

Laboratory Name: SGS Environmental Services, Inc.

Work Order Number: 1091642

ADEC File Number: Not Applicable

ADEC RecKey Number: Not Applicable

(NOTE: *NA* = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes** / No

Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-approved?

NA / Yes / No

Comments:

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes / No

Comments:

- b. Correct analyses requested? **Yes** / No

Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ}$ C)?

Yes **No**

Comments: **Cooler Temp was 8.1° C; Samples submitted shortly after collection**

- b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? **NA** / Yes / No
Comments:
- c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes** / **No**
Comments: **No problematic conditions noted**
- d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? **NA** / **Yes** / **No**
Comments: **Sample temperature noted**
- e. Data quality or usability affected? Explain. **NA**
Comments: **No. Samples collected shortly before sample submittal.**

4. Case Narrative

- a. Present and understandable? **Yes** / No
Comments:
- b. Discrepancies, errors or QC failures noted by the lab? **None Noted** / **Yes**
Comments: **PQL for arsenic in Sample SS40 was elevated**
- c. Were corrective actions documented? **None Noted** / **Yes**
Comments: **Barium post digestive spike was run.**
- d. What is the effect on data quality/usability, according to the case narrative?
Comments: **PQL for arsenic in Sample SS40 was elevated, however the reported concentration was greater than the cleanup level.**

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No
Comments:
- b. All applicable holding times met? **Yes** / No
Comments:
- c. All soils reported on a dry-weight basis? **NA** / **Yes** / **No**
Comments: **According to Heidi Geri, SGS, some soil samples were too wet to have the dry-weight measured; the sample results may be biased low.**
- d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project? **Yes** / **No**
Comments: **TCLP selenium PQL is the same as the TCLP MCL/Cleanup Level.**

- e. Data quality or usability affected? Explain.

Comments: **Total selenium was not reported in the project samples and is unlikely to be present in leachable concentrations greater than the TCLP MCL.**

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?

Yes / No

Comments:

- ii. All method blank results less than PQL? **Yes** / No

Comments:

- iii. If above PQL, what samples are affected? **NA**

Comments:

- iv. Do the affected sample(s) have data flags? **NA** / Yes / No

Comments:

If so, are the data flags clearly defined? **NA** / Yes / No

Comments:

- v. Data quality or usability affected? Explain. **NA**

Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?

(LCS/LCSD required per AK methods, LCS required per SW846) **NA** / Yes / No

Comments:

- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **NA** / **Yes** / No

Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) **Yes** / No

Comments:

- iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods

20%; all other analyses see the laboratory QC pages) **Yes** / No
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected? **NA**
Comments:

vi. Do the affected samples(s) have data flags? **NA** / Yes / No
Comments:

If so, are the data flags clearly defined? **NA** / Yes / No
Comments:

vii. Data quality or usability affected? Explain. **NA**
Comments:

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? **NA** / Yes / No
Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **NA** / Yes / No
Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? **NA** / Yes / No
Comments:

If so, are the data flags clearly defined? **NA** / Yes / No
Comments:

iv. Data quality or usability affected? Explain. **NA**
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.) [soil and water]

i. One trip blank reported per matrix, analysis and cooler? **NA** / Yes / No
Comments:

ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the CoC? **NA** / Yes / No (if no explain)

iii. All results less than PQL? **NA** / Yes / No
Comments:

iv. If above PQL, what samples are affected? **NA**
Comments:

v. Data quality or usability affected? Explain. **NA**
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes **No**
Comments:

ii. Were the field duplicates submitted blind to the lab? **NA**/ Yes / No
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs?
(Recommended: 30% for water, 50% for soil) **NA**/ Yes / No
Comments:

iv. Data quality or usability affected? Explain. **NA**

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below)
NA/ Yes / No
Samples collected for screening purposes; this level of quality control not necessary.

i. All results less than PQL? **NA**/ Yes / No
Comments:

ii. If results are above PQL, what samples are affected? **NA**
Comments:

iii. Data quality or usability affected? Explain. **NA**
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? **NA**/ Yes / No
Comments:

ATTACHMENT 3
BUDGETARY COST ESTIMATE

ROM COST ESTIMATE

SHANNON & WILSON, INC.

Hiland Mountain Correctional Center, Eagle River, Alaska

Project Tasks	Option 1: Soil Disposal	Option 2: Lead and Soil Reclamation
Task 1. Cleanup Plan and RCRA ID Number Coordination	\$4,100	\$4,100
Task 2. Soil Disposal or Reclamation - Field Activities *	\$638,000	\$539,000
Task 3. Confirmation Sampling **	\$8,000	\$9,500
Task 4. Reporting	\$3,000	\$3,000
Project Total:	\$653,100	\$555,600

*Assumes 800 cubic yards of lead-impacted soil and that the impacted soil can be addressed with a single field effort (i.e. confirmation results verify complete removal)

**A minimum of 40 analytical samples and 4 duplicate samples will be collected from the excavation base (Options 1 and 2)

In addition, a minimum of 7 analytical samples and one duplicate will be collected from the post-treatment soil (Option 2)

(Guidance for Cleanup of Petroleum Contaminated Sites, September 2000)

For Option 1, samples will be collected from the base of the excavation to confirm impacted material has been removed

For Option 2, samples will be collected from the base of the excavation and post-treatment

ATTACHMENT 4

IMPORTANT INFORMATION ABOUT YOUR

GEOTECHNICAL/ENVIRONMENTAL REPORT



Date: July 2009
To: ADOT&PF
Re: Hiland Mountain Correctional Center, Eagle
River, Alaska

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland